

DETERMINATION OF TOTAL OZONE FROM HIRS2/MSU SOUNDING DATA

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HIRS2/MSU are the two major components of the operational temperature sounding system on the NOAA low earth orbiting satellites. HIRS2 is a 20 channel infrared radiometer, including one channel in the $9.6 \mu\text{m}$ O_3 band, and MSU is a 4 channel microwave radiometer. The data are analyzed with a multi-spectral physically based retrieval technique which determines surface temperature, atmospheric temperature profile, humidity profile, total O_3 burden and cloud cover, consistent with the observed radiances. Retrievals are performed globally day and night and in polar winter because sunlight is unnecessary in the infrared region.

Thus far, data from December 1978 to May 1979 have been analyzed and results compared to TOMS products. Day-night differences of retrieved total ozone burden from HIRS2/MSU data averaged over a period of time are generally the $9.6 \mu\text{m}$ band observations which exhibit a diurnal cycle, such as ground temperature and cloudiness, are well accounted for in the analysis.

The total ozone fields computed from HIRS2/MSU are somewhat noisy compared to TOMS results and show latitude dependent systematic errors which vary slowly in time. We have used systematic errors from previous time periods to correct the HIRS2 soundings. Comparison of fields of HIRS2 and TOMS derived ozone will be shown. Results are encouraging and indicates useful soundings of total O_3 burden can be done at night and in the polar winter. Ideally, joint infrared, microwave, and ultra-violet systems should be flown on low earth orbiting as well as geostationary satellites to best utilize the complementary nature of the observations.